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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/689,348 | 10/20/2003 | Stephan Grunow | TI-36564 | 4206 |
| 23494 7590 10/31/2008 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265 | | | | |
| EXAMINER | | | | |
| MOVVA, AMAR | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2894 | | | | |
| NOTIFICATION DATE | | DELIVERY MODE | | |
| 10/31/2008 | | ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

**Advisory Action
Before the Filing of an Appeal Brief**

| | |
|--------------------------------------|--------------------------------------|
| Application No. 10/689,348 | Applicant(s) GRUNOW ET AL. |
| Examiner AMAR MOVVA | Art Unit 2894 |

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 16 October 2008 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires _____ months from the mailing date of the final rejection.
b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ They raise the issue of new matter (see NOTE below);
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
The status of the claim(s) is (or will be) as follows:
Claim(s) allowed: _____.
Claim(s) objected to: _____.
Claim(s) rejected: _____.
Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art Unit 2894

Continuation of 11, does NOT place the application in condition for allowance because:

- a. Applicant argues that the contiguous aspect of the low k dielectric material (70, fig. 2a) provides support for an inherent disclosure of a thickness ratio of 3:2 (X1:X2) for layer 70 at bottom of the trench vis a vis the sidewall. Examiner notes that while layer 70 is contiguous it is clearly not of a consistent thickness. One of ordinary skill in the art would not read different portions of layer (where one is labeled X1 and the other is not) to be both of X1 thickness when an intervening portion of the layer is of a different thickness and thus express labeling of the bottom portion of the trench barrier layer is necessary.
- b. Applicant and the fact the sidewalls are separately and labeled with only two designations of thickness, X1 and X2 in fig. 2a provides support for an inherent disclosure of a thickness ratio of 3:2 for layer 70 at bottom of the trench vis a vis the sidewall. Examiner notes that the X1 designation only points the thickness outside of the trench while X2 points to the sidewalls. The fact that there are only two designations merely provides evidence that the thickness of layer 70 at the bottom of the trench is unknown.
- c. Applicant argues that the fact that CVD, which is one of applicant's means of forming layer 70, can yield the desired structure is evidence of the desired structure necessarily must produce that structure. As preliminary matter the examiner notes that evidence, even if provided, that a process can produce a structure does not provide evidence that it can inherently produce that structure. Secondly if the deposition process of layer 70 can but does not necessarily result in the desired structure then the claim would raise enablement issues. Furthermore applicant's stated deposition techniques do not inherently show equivalence of thickness since issues that would cause the thicker portion of 70 in the trench vis a vis thicker portion outside of the trench to vary (in PVD and CVD as specified in the specification as the methodology of depositing layer 70) would be poor step coverage depending on the specific materials of the deposition, a lack of knowledge as to what angles were used in the deposition, and whether or not the deposition may have had multiple steps with masks to isolate certain areas for deposition.
- d. As a side note examiner notes that applicant's arguments in the previous response that the deposition techniques disclosed in applicant's disclosure, e.g. CVD, would inherently result in an equivalent thickness on the upper surface outside of the trench and the bottom surface of the trench then applicant would essentially admit to the fact that the rejection of Cohen in view of Satta (which uses a CVD deposition for the barrier layer) dated 9-8-06 would read on the instant claims.
- e. Applicant argues that one of ordinary skill in the art would have easily appreciated that the upper surface of the dielectric layer refers to not only the surface (35, fig. 2a) outside of the trench but also the bottom of the trench. It should be noted that applicant's specification expressly discloses: "X1 represents the thickness of the non-conformal layer 70 formed over the upper surface 35 of the low K dielectric layer 20" (lines 13-15, page 8) which identifies the upper surface as element 35. Surface 35 is identified three times for all the surfaces outside of the trench in fig. 2a. Most critically neither of the bottoms of either trench labels the surface to be element 35. Thus in light of applicant's specification one of ordinary skill in the art would conclude that the "upper surface" refers to the surfaces 35 labeled outside of the trench. Moreover the labeling of the upper surface in applicant's specification appears to contravene applicant's current interpretation of what the upper surface comprises.

35 USC 112 states that: "the specification shall contain a written description of the invention ... in such full, clear, concise, and exact terms". Thus the context of what comprises an upper surface is at best an ambiguity..